

## CLAIMS

1. A printer for receiving document data from a computer system and printing an interface onto a surface, the interface being at least partially based on the document data,  
5 the document data including identity data indicative of at least one identity, the identity being associated with a region of the interface, the interface including coded data, the printer including:
- a coded data generator configured to generate the coded data based at least partially on the identity data;
- 10 a printing mechanism for printing the interface onto the surface; and
- a first ink reservoir for supplying first ink to the printing mechanism, whereby the coded data is printed using the first ink, and wherein the first ink, when printed on the interface is not substantially visible.
- 15 2. A printer according to claim 1, wherein the first ink is absorbent or reflective in the ultraviolet spectrum or the infrared spectrum.
3. A printer according to claim 1, wherein the first ink is comprised of a compound having at least one polar substituent group selected from the group  
20 comprising  $-\text{SO}_3\text{H}$ ,  $-\text{NH}_2$  and  $-\text{CN}$ .
4. A printer according to claim 1, wherein the interface includes visible information in addition to the coded data, the visible information being based at least partially on the response data.
- 25 5. A printer according to claim 1, wherein the coded data is also indicative of at least one reference point of the region.

6. A printer according to claim 3, wherein the at least one reference point is determined on the basis of a coded data layout.

7. A printer according to claim 4, wherein the printer is configured to receive the  
5 coded data layout from the computer system.

8. A printer according to claim 5, further including storage means for storing a plurality of the coded data layouts, the printer being configured to:

receive, from the computer system, layout selection information indicative of one of the  
10 coded data layouts; and

use the layout selection information to select one of the stored coded layouts for use in determining the at least one reference point.

9. A printer according to any one of claims 1 to 8, wherein the coded data includes  
15 at least one tag, each tag being indicative of the identity of the region.

10. A printer according to claim 8, wherein the coded data includes a plurality of the tags, the coded data generator being configured to ascertain a position of each tag prior to printing, the respective positions being determined on the basis of a coded data  
20 layout.

11. A printer according to claim 9, wherein the coded data generator is configured to receive the coded data layout from the computer device prior to printing the coded data.

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12. A printer according to claim 5, further including storage means for storing a plurality of the coded data layouts, the coded data generator being configured to:

receive, from the computer device, layout selection information indicative of

one of the coded data layouts; and

generate the coded data based on the layout selection information.

13. A printer according to claim 9, wherein each of the tags includes:

5 first identity data defining a relative position of that tag; and

second identity data identifying the region.

14. A printer according to any one of claims 1 to 6, 11 or 12, the printer being configured to print the interface onto the surface on demand.

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15. A printer according to any one of claims 1 to 6, 11 or 12, wherein the interface is printed over a plurality of the pages.

16. A printer according to any one of claims 1 to 6, wherein the surface is defined  
15 by a substrate.

17. A printer according to claim 15, wherein the substrate is laminar.

18. A printer according to claim 9, wherein the tags are disposed at predetermined  
20 positions on the surface.

19. A printer according to claim 18, wherein the tags are disposed on the surface within a tessellated pattern comprising a plurality of tiles, each of the tiles containing a plurality of the tags.

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20. A printer according to claim 19, wherein the tiles interlock with each other to substantially cover the surface.

21. A printer according to claim 20, wherein the tiles are all of a similar shape.

22. A printer according to claim 21, wherein the tiles are triangular, square,  
5 rectangular or hexagonal.

23. A printer according to claim 19 wherein the tags are disposed stochastically within each of the tiles.

10 24. A printer according to claim 9, wherein each of the tags includes at least one common feature in addition to the second identity data.

25. A printer according to claim 24, wherein at least one common feature is configured to assist finding and/or recognition of the tags by associated tag reading  
15 apparatus.

26. A printer according to claim 24, wherein the at least one common feature is represented in a format incorporating redundancy of information.

20 27. A printer according to claim 26, wherein the at least one common feature is rotationally symmetric so as to be rotationally invariant.

28. A printer according to claim 26, wherein the at least one common feature is ring-shaped.

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29. A printer according to claim 9, wherein each of the tags includes at least one orientation feature for enabling a rotational orientation of the tag to be ascertained by

associated tag reading apparatus.

30. A printer according to claim 29, wherein the at least one orientation feature is represented in a format incorporating redundancy of information.

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31. A printer according to claim 30, wherein the at least one orientation feature is rotationally asymmetric.

32. A printer according to claim 30, wherein the at least one orientation feature is  
10 sewed along its major axis.

33. A printer according to claim 9, wherein each of the tags includes at least one perspective feature for enabling a perspective distortion of the tag to be ascertained by associated tag reading apparatus.

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34. A printer according to claim 33, wherein the at least one perspective feature includes at least four sub-features which are not coincident.

35. A printer according to claim 13, wherein each tag includes a plurality of tag  
20 elements, the first and second identity data each being defined by a plurality of the elements.

36. A printer according to claim 35, wherein the tag elements are disposed in one or more arcuate bands around a central region of each tag.

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37. A printer according to claim 36, wherein there are a plurality of the arcuate bands disposed concentrically with respect to each other.

38. A printer according to claim 36, wherein each element takes the form of a dot having a plurality of possible values.

5 39. A printer according to claim 38, wherein the number of possible values is two.

40. A printer according to claim 35, wherein when representing one of the possible values, the tag elements absorb, reflect or fluoresce electromagnetic radiation of a predetermined wavelength or range of wavelengths to a predetermined greater or lesser  
10 extent than the surface.

41. A printer according to claim 35, wherein the possible values of the tag elements are defined by different relative absorption, reflection or fluorescence of electromagnetic radiation of a predetermined wavelength or range of wavelengths.  
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42. A printer according to claim 35, wherein the tags are slightly visible to an average unaided human eye under daylight or ambient lighting conditions.

43. A printer according to claim 35, wherein the tags are visible to an average  
20 unaided human eye under daylight or ambient lighting conditions.

44. A printer according to claim 13, wherein the first identity data is represented in a format incorporating redundancy of information.

25 45. A printer according to claim 13, wherein the second identity data is represented in a format incorporating redundancy of information.

46. A printer according to claim 1, wherein the printer is an ink printer.

47. A printer according to claim 9, wherein the tags are printed using ink that is absorbent or reflective in the ultraviolet spectrum or the infrared spectrum.

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48. A printer according to claim 9, wherein the printer includes a separate ink channel for printing the tags.

49. A printer according to claim 1, wherein the printer is configured to print the  
10 coded data and additional information substantially simultaneously onto the surface.

50. A printer according to claim 49, wherein the additional information is printed onto the surface using colored or monochrome inks.

51. A printer according to claim 49, wherein the additional information is printed  
15 onto the surface using one of the following combinations of colored inks:

CMY;

CMYK;

CMYRGB; and

20 spot colour.

52. A printer according to claim 9, wherein at least a plurality of the tags are disposed stochastically upon the surface.

53. A printer according to claim 53, wherein the tags are disposed in a regular array  
25 on the surface, in accordance with the coded layout data.

54. A printer according to claim 53, wherein the array is triangular.
55. A printer according to claim 53, wherein the array is rectangular.
56. A printer according to claim 53, wherein the tags are tiled over the surface.
57. A printer according to claim 15, further including a binding mechanism for binding the pages into a bound document.
58. A printer according to claim 49, wherein the surface is defined by a face of a page, the printer further including dual printing mechanisms for printing opposite faces of the page simultaneously.
59. A printer according to any one of claims 1 to 6, 11 or 12, wherein the printing mechanism includes an inkjet printhead for printing ink onto the surface.
60. A printer according to claim 59, wherein the printhead is a drop on demand inkjet printhead.
61. A printer according to claim 60, wherein the printhead is a pagewidth printhead.
62. A printer according to claim 61 wherein the printhead is configured to deliver a plurality of ink colors onto the surface with one printing pass.
63. A printer according to claim 61, wherein the printhead includes electro-thermal bend actuators to eject the ink onto the surface.



64. A printer according to claim 63, wherein the printer includes two sets of printheads, configured to print opposite surfaces of a page substantially simultaneously.

65. A printer according to claim 63, including a forced filtered air delivery  
5 mechanism for keeping nozzles of the printhead relatively free of paper dust.

66. A printer according to claim 63, wherein the printhead includes moving nozzle chambers.

10 67. A printer according to claim 65, wherein the printer includes two sets of printheads, configured to print opposite surfaces of a page substantially simultaneously.

68. A printer according to any one of claims 1 to 67, wherein the coded data is printed using an ink that contains a dye that contains an infrared-absorbing molecule that  
15 consists of two side groups that contain an odd number of carbon atoms and unsaturated nitrogen atoms whereby each of these carbon atoms and unsaturated nitrogen atoms can be locally described as being chemically bound to three adjoining atoms if it is a carbon atom and chemically bound to two adjoining atoms if it is a nitrogen atom of which at  
20 adjoining atoms there is only one double bond to one carbon atom or an unsaturated nitrogen atom whereby the two groups are chemically bound together by one or more intervening central groups wherein the central group preferably is one of CO, O, S, SO, SO<sub>2</sub>, Se, SeO, SeO<sub>2</sub>, Te, TeO, TeO<sub>2</sub>, CR<sub>1</sub>R<sub>2</sub>, NR<sub>1</sub>, SiR<sub>1</sub>R<sub>2</sub>, GeR<sub>1</sub>R<sub>2</sub>, PR<sub>1</sub> where R<sub>1</sub> and R<sub>2</sub>, which may be the same or different, are selected from the group R; and

25 the central group may contain more than one of the above mentioned specific groups in any possible combination; and

additionally, the two side groups can be directly connected to each other; and

R is the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted

aralkyl group, a halide atom, a hydroxy group, a substituted or unsubstituted amine group, a substituted or unsubstituted thioalkyl group.

69. A printer according to claim 68 wherein the two side groups of the infrared-  
5 absorbing molecule contain any substituted group.

70. A printer according to claim 67 wherein bulky substituents are utilized in the infrared-absorbing molecule.

10 71. An interface surface produced by a printer according to any one of claims 1 to  
6, 11 or 12.